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remains in the reader's mind as to whether a fuller knowledge of the "potency" might make the supposition of the *Fernkraft* unnecessary. Cannot formative material operated by chemical and physical forces yet furnish a solution of the problem? Before one is quite converted from the dogmatic materialism of the day to the rational vitalism of Driesch, it is fitting to know well the grounds of the new belief. The phenomena of localization are most admirably analyzed and discussed in the paper under consideration. Other general questions therein implied, as, for instance, Prospective Potency, are ere long to receive, we are informed, a fuller definition and discussion. These further studies will be awaited with much interest.

JOHN H. GEROULD.

Praxis und Theorie der Zellen- und Befruchtungslehre.[1] — This is a book of 260 pages, with 137 text-figures, and is designed to be a practical guide for courses in cytology. As such it cannot fail to be of service, since it is the first work yet published with this distinctive aim. There is, to be sure, in Bergh's *Zelle und Gewebe* an appendix on technique, but this is no more extensive than may be found in many text-books of histology, while the larger works of Hertwig, Wilson, and Henneguy present the facts and theories with regard to the cell from a general rather than from a laboratory standpoint.

As the title indicates, the book also presents in brief form the general facts and theories of cytology, together with a short historical review of different phases of the subject and references to some of the more important literature. This feature of the work, however, lacks the completeness and critical character of the larger works devoted to this field, while the laboratory directions are so interwoven with the general part as to make the book much less readable than the other works mentioned. Unfortunately this combination also renders the book less useful as a laboratory guide, since the directions for preparing and observing material are less concise and explicit, and are much more difficult to find than would otherwise be the case.

The book is the outgrowth of a practical course on the cell given at the Zoölogical Institute at Freiburg, and in conformity with this course the contents are divided into sixteen days, two or three objects being considered each day. The subject for each day and the objects of study are as follows: First Day, Plant and animal tissue cells: Objects, stamen hairs of Tradescantia, epidermis of larval salamander. Second Day, Unicellular organisms: Objects, Amœba, Pelomyxa, Stylonichia. Third Day, Resting nuclei; nuclear reticulum and nucleoli: Objects, living nuclei from the urinary bladder of Salamandra, ovarian eggs of Siredon and Triton. Fourth Day, Chemistry of the cell nucleus: Objects, sperm of salmon and trout, leaf epidermis of Leucojum. Fifth Day, Physiology of the cell nucleus: Objects, Stentor, root hairs of seedlings of pea, egg tubes of Dytiscus. Sixth Day, Cell division, (*a*) Chromatic Figure: Objects, epithelium from cornea and tail of larval salamander, peripheral protoplasmic layer of the embryo sac of Fritillaria, testis of salamander. Seventh Day, Cell division, (*b*) Achromatic Figure: Fertilized eggs of Ascaris, uterine eggs of Thysanozoön. Eighth Day, Centrosomes: Objects, eggs of Cyclops, pigment cells of the corium of the pike, winter eggs of Sida. Ninth Day, Oögenesis, (*a*) Germinal Vesicle: Objects, ovary of Canthocamptus and of other fresh-water copepods. Tenth Day, Oögenesis, (*b*) Germinal Spot and Yolk Nucleus: Objects, ovarian eggs of fresh-water mussel, fertilized eggs of Myzostoma, ovarian eggs of Tegnaria and Pholcus. Eleventh Day, Oögenesis, (*c*) Polar-body Formation: Objects, fertilized eggs of starfish, uterine eggs of Ascaris. Twelfth Day, Spermatogenesis: Objects, sperm tubes of Ascaris, testis of salamander. Thirteenth Day, Reduction divisions: Objects, oviducal eggs of Diaptomus, uterine eggs of Thysanozoön, laid eggs of Cyclops. Fourteenth Day, Fertilization of the metazoön egg: Objects, living eggs of Diplogaster and Rhabditis, eggs of sea urchin, uterine eggs of Ascaris. Fifteenth Day, Fertilization, further facts and theories: Objects, bastard larvæ of sea urchin, Antherozoids of the Fern, bastard larvæ of Echinus and Sphærechinus (including Boveri's famous experiment on the fertilization of enucleated eggs), results of crossing white mice with the Japanese house mice. Sixteenth Day, Cells of the germ tracks: Objects, uterine eggs of Ascaris, eggs of *Cyclops brevicornis*.

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[1] Hacker, Dr. Valentin. Jena, Gustav Fischer, 1899, 7 marks.

The subjects considered show that the field is well covered, while the objects taken up for study on some of the days would indicate that the "day" is to be interpreted in the Biblical sense. The most notable omission from the practical work is the whole subject of the cleavage of the egg, in which are illustrated, as perhaps nowhere else, the various kinds of cell division (equal, unequal, differential, etc.), the mechanics of cell division, experimental modifications of cleavage, and the promorphology of the ovum. These subjects are briefly discussed under the fertilization of the egg, but no practical work is suggested. Some of the objects suggested for study are not of sufficiently wide or abundant occurrence to make them generally accessible, *e.g.*, the eggs of Thysanozoön, Sida, Myzostoma, Siredon, and the repetition of Boveri's experiment on the fertilization of enucleated egg fragments. In spite of these limitations, the work will be of great value to all who are giving courses on practical cytology.

Davenport's Statistical Methods.[1] — This work is intended to meet "the call for a simple presentation of the newer statistical methods in their application to biology," and seems an admirable handbook for the purpose. It consists of definitions and explanations of methods, including "the seriation and plotting of data and the frequency of the polygon," etc., with a selected bibliography of the subject, the whole occupying less than fifty pages, followed by about one hundred pages of formulas and logarithmic tables. Chapter V (pp. 38, 39) gives "Some Applications of Statistical Biological Study." While the "newer statistical methods" are admirably suited to the investigation of certain special problems, which may be of the highest interest and importance, they seem too minute and detailed, and to require the expenditure of too much time and labor, to be of very broad application, such as the author apparently contemplates. Thus, it is said: "The origin of species through geographical segregation can be studied by the determination of *place-modes;* that is, the modal condition of specific characters of one and the same species in various localities. The progress of specific differentiation will be measured by the change in place-modes from decade to decade, or by the formation of a binomial curve in the place of a modal one; by the gradual separation of the two modes of a binomial curve." Theoretically this is possible, but taking into account what it implies, even for a single species, does it not border on the chimerical, or at least on the impracticable? First is necessarily involved a geographical area of considerable extent — at least hundreds of miles square, under ordinary conditions of topography — within which many observation stations must be chosen, and at which work must be continued "from decade to decade," and detailed measurements made of every measurable feature of many

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[1] *Statistical Methods* with special reference to Biological Variation. By C. B. Davenport, Ph.D., Instructor in Zoölogy at Harvard University. First edition. First thousand. New York, John Wiley & Sons. London, Chapman & Hall, Limited, 1899. — 12mo, 148 pp.